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UTILITY PATENT APPLICATION TRANSMITTAL

(Only for new nonprovisional applications under 37 CFR 1 53(b))

Attorney Docket	660336.90918
First Inventor	Joel I. Dulebohn
Title	METHOD FOR PREVENTING PHOTOOXIDATION OR AIR OXIDATION IN FOOD, PHARMACEUTICALS AND PLASTICS
Express Mail Label No.	EJ636885441US

APPLICATION ELEMENTS

See MPEP Chapter 600 concerning utility patent application contents

ADDRESS TO: **Commissioner for Patents, Box Patent Application, Washington, D.C. 20231**

1. [X] Fee transmittal Form (Submit an original and a duplicate for fee processing)
2. [ ] Applicant claims small entity status See 37 CFR 1.27.
3. [X] Specification [Total Pages 11] *(preferred arrangement set forth below)*
   - Descriptive title of the invention
   - Cross References to Related Applications
   - Statement Regarding Fed Sponsored R&D
   - Reference to sequence listing, a table, or a computer program listing appendix
   - Background of the Invention
   - Brief Summary of the Invention
   - Brief Description of the Drawings *(if filed)*
   - Detailed Description
   - Claim(s)
   - Abstract of the Disclosure
4. [ ] Drawing(s) (35 USC 113) [Total Sheets]
5. Oath or Declaration [Total Pages 3]
   a. [ ] Newly executed (original or copy)
   b. [ ] Copy from prior Application (37 CFR 1.63(d)) (for continuation/divisional with Box 17 completed)
      i. [ ] DELETION OF INVENTOR(S) Signed Statement attached deleting inventor(s) named in prior application, see 37CFR 1.63(d)(2) and 1.33(b).
6. [ ] Application Data Sheet. Se 37 CFR 1.76
7. [ ] CD-ROM or CD-R in duplicate, large table or Computer Program (Appendix)
8. Nucleotide and/or Amino Acid Sequence Submission (if applicable, all necessary)
   a. [ ] Computer Readable Form (CRF)
   b. *Specification Sequence Listing on*
      [ ] CD-ROM or CD-R (2 Copies); or
      [ ] paper
   c. [ ] Statements verifying identity of above copies

ACCOMPANYING APPLICATION PARTS

9. [ ] Assignment Papers (cover sheet & documents)
10. [ ] 37 CFR 3.73(b) Statement (where there is an assignee) [ ] Power of Attorney
11. [ ] English Translation Document *(if applicable)*
12. [ ] Information Disclosure Statement (IDS)/PTO-1449 [ ] Copies of IDS Citations
13. [ ] Preliminary Amendment
14. [X] Return receipt postcard (MPEP 503) *(Should be specifically itemized)*
15. [ ] Certified copy of priority Document(s) *(if foreign priority is claimed)*
16. [ ] Other:

17. **If a CONTINUING APPLICATION**, check appropriate box and supply the requisite information: and in a preliminary amendment or in an Application Data Sheet under 37 CFR 1.76

[ ] Continuation [ ] Divisional [ ] Continuation-in-part (CIP) of prior application no. ___/_____

Prior application information: Examiner: Group/Art Unit:

For CONTINUATION OR DIVISIONAL APPS only: The entire disclosure of the prior application, from which an oath or declaration is supplied under Box 5b, is considered a part of the disclosure of the accompanying continuation or divisional application and is hereby incorporated by reference. The incorporation can only be relied upon when a portion has been inadvertently omitted from the submitted application parts.

18. CORRESPONDENCE ADDRESS

[ ] Customer Number or Bar Code Label (Insert Customer No. or Attach bar code label here) or [X] Correspondence address below

NAME	Jean C. Baker				
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CITY	Milwaukee	STATE	Wisconsin	ZIP CODE	53202-4497
COUNTRY	USA	TELEPHONE		FAX	(414) 271-3552

Name	Jean C. Baker	Registration No. (attorney/Agent)	35,433
Signature	Jean C. Baker	Date:	September 25, 2000

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FEE TRANSMITTAL for FY 2000

Patent fees are subject to annual revision.
Small Entity payments must be supported by a small entity statement
otherwise large entity fees must be paid, See Forms PTO/SB/09-12
See 37 C.F.R. §§1.27 and 1.28

TOTAL AMOUNT OF PAYMENT	$690.00

Complete if Known	
Application Number	
Filing Date	September 25, 2000
First Named Inventor	Joel I. Dulebohn
Group Art Unit	
Examiner Name	
Attorney Docket Number	660336.90918

METHOD OF PAYMENT (check one)

1. [X] The Commissioner is hereby authorized to charge indicated fees and credit any over payments to:

Deposit Account Number: 17-0055

Deposit Account Name: Quarles & Brady LLP

[X] Charge Any Additional Fee Required Under 37 CFR 1.16 and 1.17

2. [ ] Payment Enclosed:

[ ] Check [ ] Money Order [ ] Other

FEE CALCULATION

1. BASIC FILING FEE

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
101	690	201	345	Utility filing fee	$690.00
106	310	206	155	Design filing fee	
107	480	207	240	Plant filing fee	
108	690	208	345	Reissue filing fee	
114	150	214	75	Provisional filing fee	

SUBTOTAL (1) ($)690.00

2. CLAIMS

		Extra		Fee from below		Fee Paid
Total Claims	13	-20**=	0	X 0	=	0
Independent	1	-3**=	0	X 0	=	0
Multiple Dependent Claims				0	=	0

** or number previously paid, if greater, For reissues see below

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description
103	18	203	9	Claims in excess of 20
102	78	202	39	Independent claims in excess of 3
104	260	204	130	Multiple dependent claim
109	78	209	39	Reissue independent claims over original patent
110	18	210	9	Reissue claims in excess of 20 and over original patent

SUBTOTAL (2) ($) 0

FEE CALCULATION (continued)

3. ADDITIONAL FEES

Large Entity Fee Code	Large Entity Fee ($)	Small Entity Fee Code	Small Entity Fee ($)	Fee Description	Fee Paid
105	130	205	65	Surcharge - late filing fee or oath	
127	50	227	25	Surcharge - late provisional filing fee or cover sheet	
139	130	139	130	Non-English specification	
147	2,520	147	2,520	For filing a request for reexamination	
112	920	112	920	Requesting publication of SIR prior to Examiner action	
113	1,840	113	1,840	Requesting publication of SIR after Examiner action	
115	110	215	55	Extension for reply within first month	
116	380	216	190	Extension for reply within second month	
117	870	217	435	Extension for reply within third month	
118	1,360	218	680	Extension for reply within fourth month	
128	1,850	228	925	Extension for reply within fifth month	
119	300	219	150	Notice of Appeal	
120	300	220	150	Filing a brief in support of an appeal	
121	260	221	130	Request for oral hearing	
138	1,510	138	1,510	Petition to institute a public use proceeding	
140	110	240	55	Petition to revive unavoidably abandoned application	
141	1,210	241	605	Petition to revive unintentionally abandoned application	
142	1,210	242	605	Utility issue fee (or reissue)	
143	430	243	215	Design issue fee	
144	580	244	290	Plant issue fee	
122	130	122	130	Petitions to the Commissioner	
123	50	123	50	Petitions related to provisional applications	
126	240	126	240	Submission of Information Disclosure Stmt	
581	40	581	40	Recording each patent assignment per property (times number of properties)	
146	690	246	345	Filing a submission after final rejection (37 CFR 1.129(a))	
149	690	249	345	For each additional invention to be examined (37 CFR 1.129(b))	
Other fee (specify)					
Other fee (specify)					

* Reduced by Basic Filing Fee Paid SUBTOTAL (3) ($)

SUBMITTED BY				Complete (if applicable)	
Typed or Printed Name	Jean C. Baker	Registration No. (Attorney/Agent)	35,433	Telephone	(414) 277-5709
Signature	Jean C. Baker			Date	September 25, 2000

METHOD FOR PREVENTING PHOTOOXIDATION OR AIR OXIDATION IN FOOD, PHARMACEUTICALS AND PLASTICS

CROSS-REFERENCE TO RELATED APPLICATIONS

This application claims priority over provisional patent application U.S. Serial No. 60/156,130, filed September 27, 1999.

STATEMENT REGARDING FEDERALLY SPONSORED RESEARCH OR DEVELOPMENT

Not applicable.

BACKGROUND OF THE INVENTION

Milk, chocolate, butter, and other foods, when exposed to light, such as sunlight or fluorescent light, may develop a characteristic off-flavor caused by photooxidation or air oxidation. This tendency to develop an off-flavor significantly reduces the shelf-life of foods susceptible to photooxidation or air oxidation. Photooxidation or air oxidation can also cause plastics to develop undesired characteristics over time, and reduce the stability of pharmaceuticals.

There is a need in the food, plastics, and pharmaceutical industries for a method of reducing photooxidation or air oxidation in susceptible materials.

BRIEF SUMMARY OF THE INVENTION

The present invention includes a method for reducing photooxidation or air oxidation in susceptible materials, such as foods, plastics, and pharmaceuticals, comprising the step of mixing with the material an anti-photooxidation composition comprising at least one amino acid and at least one metal ion, the composition added in an amount sufficient to reduce photooxidation or air relative to a photooxidation- or air oxidation-susceptible

material lacking the anti-photooxidation composition. Preferably, the anti-photooxidation composition further comprises at least one organic acid.

Other features, objects and advantages of the present invention will become apparent to one of skill in the art after review of the specification and claims.

BRIEF DESCRIPTION OF THE SEVERAL VIEWS OF THE DRAWINGS

Not applicable.

DETAILED DESCRIPTION OF THE INVENTION

As described in the examples below, adding an antioxidation composition comprising a carboxylic acid, a metal ion, and a compound comprising an amino acid or an amino acid moiety (hereinafter referred to as an "amino acid compound" to products, such as foods, plastics and pharmaceuticals (preferably milk or white chocolate), prevents the formation of an off flavor caused by photooxidation or air oxidation of these foods.

By an "amino acid compound" it is meant an amino acid, polypeptide or protein.

By "antioxidation composition" as it is used herein, it is meant a composition that reduces the adverse effects of photooxidation or air oxidation when incorporated into a material that is susceptible to photooxidation or air oxidation.

In another embodiment, an antioxidant composition comprising an amino acid compound and a metal oxide, such as aspartate and MgO, which are capable of forming a light-absorbing complex, is used to prevent photooxidation or air oxidation in a food or other material susceptible to such oxidation. An example of a composition having at least one metal ion and at

least one amino acid that we predict will be suitable for preventing photooxidation or air oxidation is provided below.

The examples below show that the method of the invention prevents photooxidation and air oxidation in foods susceptible to such oxidation. We expect that the method of the invention can also be used in pharmaceuticals and plastic to prevent the adverse effects caused by these types of oxidation.

As described in the examples below, the amino acid compound, carboxylic acid and metal ion may be formulated as an antioxidation composition that is added to photooxidation or air oxidation susceptible material. One of ordinary skill in the art would appreciate that although these components may most conveniently be added as a stabilizing composition, one could also add these components separately to the susceptible material.

In the examples below, lysine was used as the amino acid to promote prevent photooxidation or air oxidation. It is expected that either D-lysine or L-lysine may be used in the practice of the present invention. It is also expected that any amino acid may be used in the practice of the invention. It is reasonably expected that polypeptides and proteins may also be used together with a metal ion, or a metal ion and a carboxylic acid, to prevent photooxidation or air oxidation.

Malic acid and citric acid were used in the examples below to prevent photooxidation or air oxidation. It is expected that other carboxylic acids including mono, di, tri, and polycarboxylic acids may work equally well. It is also expected that carboxylic acids containing additional functional groups such as NH_2^-, OH^-, PO_4^{-3}, and SO_4^{-2} would work as well.

In the examples, below magnesium, magnesium and calcium, or magnesium, calcium and zinc were tested and were found to be suitable metal ions in the practice of the present invention. Other metal ions are

expected to work as well, including group IA, group IIA, Ti, V, Cr, Mn, Co, Ni, Cu, Zn, Se, Fe, Mo, Sn, and Au.

The molar ratio of the metal ion to amino acid compound to carboxylic acid may vary depending upon the application. The molar ratio of the amino acid compound to the metal ion may vary from about 0.01 to about 20 when the amino acid compound is an amino acid monomer. The carboxylic acid to metal ion molar ratio can vary from about 0.01 to about 20. Preferably the molar ratio of the amino acid to metal ion varies from about 0.1 to about 4, and the molar ratio of carboxylic acid to metal ion varies from about 0.1 to about 4. Preferably a suitable antioxidation composition comprises at least on amino acid compound, at least one carboxylic acid and at least one metal ion, and has a pH in the range of 3 to 8.

In another embodiment of the present invention, the composition also reduces color fading in materials selected from the group consisting of food, plastics, flowers and paper. One cause of color fading is due to UV light interaction with the dyes and pigments comprising functional groups such as alcohol, ester, aldehyde, ketones, ether, and carboxylic acid resulting in breakdown of the dye and pigment color. The compositions of amino acid, metal and organic acid can reduce and/or prevent the breakdown of dye or pigment color by two methods. In one method, the composition adsorbs UV light that can interact with the dye and pigment and emit white light. This absorption will prevent the UV light from interaction with the functional groups of the dyes or pigments. In the second method, the functional groups and metals of the composition can stabilize the functional groups of the dyes and pigment by forming chelated bonds and/or hydrogen bonds. This will help prevent UV light from breaking down the dyes and pigments.

The composition can be blended or applied to the surface of a product, such as food, plastic flowers, and paper, to reduce and/or prevent the UV

light from interacting with the dyes and pigments. We usually observed that the fading of the material comprising the composition of amino acid, metal and organic acid to be less than the fading of untreated material without the composition.

In another embodiment of the present invention, the composition also reduces degradation of a substance selected from the group consisting of caffeine, vitamins (preferably pyridoxine, riboflavin, vitamin D, niacin, phylloquinone), folic acid, isoflavones, licorice, ginkgo, garlic, beta-carotene, peppermint, herbal extract, botanicals, peppermint, herbal extract, botanicals, natural and artificial flavors. The materials described above have functional groups such as alcohol, ester, aldehyde, ketones, ether, and carboxylic acid, that can interact with metal and functional groups of the composition of amino acid, metal and organic acid. Some of the interaction are hydrogen bonding and chelation. Drinks were prepared with vitamins and flavor with and without the composition of amino acid, metal and organic acid. The drinks were pasteurized. The drinks were then taste tested, and the drinks with the composition had an overall better taste.

In preferred embodiment, the product is milk or white chocolate and the level of the composition is between 0.001% and 2% w/w (Note: all percentage concentrations are w/w).

In a most preferred embodiment, the product is milk, the range is 0.01% to 0.5%, and the composition is 65% solid solution of lysine:mg:malic:citric with a molar ratio of 1.49:1.2:16:0.72.

In another embodiment, the product is white chocolate, the range is from 0.1% to 0.5%, and the composition is lysine:ca:malic:citric with a molar ratio of 1.49:1:2.16:0.72, which is a crème.

In another embodiment, the product is plastic and the level of the composition is from 0.001% to 5%, preferably 0.01% to 2%.

The following non-limiting examples are intended to be purely illustrative.

EXAMPLES

Preparation of antioxidation compositions

The following are examples of antioxidation compositions that may be used to protect products, such as food, pharmaceuticals, and plastics, against photooxidation or air oxidation.

Composition A
160 g water
110 g lysine HOH (0.67 moles)
40 g MgO (0.99 moles)
130 g malic acid (0.97 moles)
62 g citric acid (0.32 moles)

The pH of the solution varies from 4.4 to 4.8 and is approximately 65% solid solution.

Composition B
157 g water
110 g lysine HOH (0.67 moles)
10 g CaO (0.18 moles)
18 g MgO (0.45 moles)
100 g malic acid (0.75 moles)
73 g citric acid (0.38 moles)

The pH of the solution varies from 3.9 to 4.3 and is approximately 65% solid solution.

Composition C
166.4 g water
143 g lysine HOH (0.87 moles)
13 g CaO (0.23 moles)
13 g MgO (0.32 moles)
13 g ZnO (0.16 moles)
122.2 g malic acid (0.91 moles)
58.5 g citric acid (0.30 moles)

The pH of the solution varies from 4.2 to 4.6 and is approximately 65% solid solution.

Composition D
1571.5 g water
1155.1 g lysine HOH (7.03 moles)
189.1 g MgO (4.69 moles)

1365.1 g malic acid (10.18 moles)
654.6 g citric acid (3.41 moles)

The pH of the solution varies from 3.6 to 4.0 and is approximately 65% solid solution.

Composition E
10 g water
10 g lysine HOH (0.061 moles)
40 g MgO (0.060 moles)
7.2 g succinic acid (0.061 moles)

The pH of the solution varies from 8 to 9.

Composition F
15 g water
8.2 g DL-aspartic acid (0.062 moles)
2.5 g MgO (0.062 moles)

Compositions A-F may be used as a liquid as prepared, or may be used as a solid after drying by any suitable means, including, for example, microwave, spray dried, drum dried, and any other feasible process, such as fluid bed agglomeration and cooker extrusion.

Evaluation of milk stability after exposure to light

The following samples were prepared, exposed to light and evaluated as described below.

Control

A 200-ml aliquot of whole milk in a clear container wrapped in aluminum foil.

Sample 1

A 200-ml aliquot of whole milk in a clear container.

Sample 2

A 200-ml aliquot of whole milk and 2 grams of composition B.

The control and test samples were exposed for two hours and 10 minutes to a Sylvania Superflood light (blue bulb) placed at a distance of 11 inches from the container. The control and test samples were evaluated by tasting.

No off-flavor was noted in the control. Sample one had an off taste, similar to that of sour milk. Sample two tasted comparable to the control.

Evaluation of white chocolate stability after exposure to light

The following samples were prepared, exposed to fluorescent light and evaluated as described below.

Control

White chocolate not exposed to light

Sample 1

White chocolate exposed to light

Sample 2

White chocolate blended with composition A (0.2% w/w) and exposed to light

Sample 3

White chocolate blended with composition B (0.2% w/w) and exposed to light

Sample 4

White chocolate blended with composition C (0.2% w/w) and exposed to light

Sample 5

White chocolate blended with composition D (0.2% w/w) and exposed to light

Each sample was exposed to light for several hours to days and sampled periodically for taste tests. The chocolate comprising anti-photooxidation composition A, B, C, or D had a flavor comparable to the control, whereas the untreated white chocolate (sample A) had an off flavor. Sample C, which comprises composition B, had a flavor closest to the control.

CLAIMS

We claim:

1. A method of reducing photooxidation or air oxidation in a product comprising the step of dispersing within the product an antioxidation composition comprising at least one amino acid, at least one metal ion, and at least one organic acid, the composition added in an amount sufficient to reduce photooxidation relative to a photooxidation-susceptible or air oxidation-susceptible material lacking the anti-oxidation composition.

2. The method of claim 1 in which the molar ratio of the amino acid compound to the metal ion is between 0.01 and 20.

3. The method of claim 1 in which the carboxylic acid to metal ion molar ratio is between 0.01 and 20.

4. The method of claim 2 wherein the molar ratio of the amino acid to metal ion is between 0.1 and 4.

5. The method of claim 2 wherein the molar ratio of carboxylic acid to metal ion is between 0.1 and 4.

6. The method of claim 1 wherein the composition also reduces color fading in materials selected from the group consisting of food, plastics, flowers and paper.

7. The method of claim 1 wherein the composition also reduces degradation of a substance selected from the group consisting of caffeine,

vitamins, folic acid, isoflavones, licorice, ginkgo, garlic, beta-carotene, peppermint, herbal extract, botanicals, natural and artificial flavors.

8. The method of claim 1, wherein the product is milk and wherein the level of the composition is between 0.001% and 2%.

9. The method of claim 8, wherein the range is 0.01% to 1.0% and wherein the composition is 65% solid solution of lysine:mg:malic:citric with a molar ratio of 1.49:1.2.16:0.72.

10. The method of claim 1, wherein the product is white chocolate and the level of the composition is 0.001% to 2%.

11. The method of claim 10, wherein the range is from 0.1% to 0.5% and wherein the composition is cream of lysine:ca:malic:citric with a molar ratio of 1.49:1:2.16:0.72.

12. The method of claim 1, wherein the product is plastic and the level of the composition is from 0.001% to 5%.

13. The method of claim 12, wherein the range is between 0.01% and 2%.

ABSTRACT OF THE DISCLOSURE

Disclosed is a method of reducing photooxidation or air oxidation in susceptible materials such as food, plastics or pharmaceuticals comprising mixing the material with an antioxidation composition comprising at least one amino acid, at least one metal ion, and at least one carboxylic acid in an amount effective to reduce photooxidation in the material.

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0010/PTO
Rev. 6/95

U.S. Department of Commerce
Patent and Trademark Office

DECLARATION FOR UTILITY OR DESIGN PATENT APPLICATION

[X] Declaration Submitted with Initial Filing OR [ ] Declaration Submitted after Initial Filing

Attorney Docket Number	660336.90918
First Named Inventor	Joel I. Dulebohn
COMPLETE IF KNOWN	
Application Number	
Filing Date	September 25, 2000
Group Art Unit	
Examiner Name	

As a below named inventor, I hereby declare that:

My residence, post office address and citizenship are as stated below next to my name.

I believe that I am the original, first and sole inventor (if only one name is listed below) or an original, first and joint inventor (if plural names are listed below) of the subject matter which is claimed and for which a patent is sought on the invention entitled:

METHOD FOR PREVENTING PHOTOOXIDATION OR AIR OXIDATION IN FOOD, PHARMACEUTICALS AND PLASTICS

(Title of the Invention)

the specification of which

[X] is attached hereto

OR

[ ] was filed on (MM/DD/YYYY) _____ as United States Application Number or PCT International Application Number _____ and was amended on (MM/DD/YYYY) _____ (if applicable)

I hereby state that I have reviewed and understand the contents of the above identified specification, including the claims, as amended by any amendment referred to above

I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56

I hereby claim foreign priority benefits under Title 35, United States Code §119(a)-(d) or §365(b) of any foreign application(s) for patent or inventor's certificate or §365(a) of any PCT international application which designated at least one country other than the United States of America, listed below and have also identified below, by checking the box, any foreign application for patent or inventor's certificate, or any PCT international application having a filing date before that of the application on which priority is claimed.

Prior Foreign Application Number(s)	Country	Foreign Filing Date (MM/DD/YYYY)	Priority Not Claimed	Certified Copy Attached? YES	NO
n/a			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]
			[ ]	[ ]	[ ]

[ ] Additional foreign applications numbers are listed on a supplemental priority sheet attached hereto:

I hereby claim the benefit under Title 35, United States Code §119(e) of any United States provisional application(s) listed below.

Application Number(s)	Filing Date (MM/DD/YYYY)
60/156,130	September 27, 1999

[ ] Additional provisional application numbers are listed on a supplemental priority sheet attached hereto.

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Please type a plus sign (+) inside this box [+]

DECLARATION

I hereby claim benefit under Title 35, United States Code §120 of any United States application(s), or §365(C) of any PCT international application designating the United States of America, listed below and, insofar as the subject matter of each of the claims of this application is not disclosed in the prior United States application or PCT international application in the manner provided in the first paragraph of Title 35, United States Code §112, I acknowledge the duty to disclose information which is material to patentability as defined in Title 37, Code of Federal Regulations §1.56 which became available between the filing date of the prior application and the national or PCT international filing date of this application.

U.S. Parent Application Number	PCT Parent Number	Parent Filing Date (MM/DD/YYYY)	Parent Patent Number *(if applicable)*
n/a			

[ ] Additional U.S. or PCT international application numbers are listed on a supplemental priority sheet attached hereto

As a named inventor, I hereby appoint the following attorney(s) and/or agent(s) to prosecute this application and all continuation and divisional applications based thereon, and to transact all business in the Patent and Trademark Office connected therewith:

[ ] Firm Name _____ Customer Number or label _____

OR

[X] List attorney(s) and/or agent(s) name and registration number below

Name	Registration Number	Name	Registration Number
Thomas W. Ehrmann	20,374	Jean C. Baker	35,433
Herbert W. Mylius	24,578	David G. Ryser	36,407
Barry E. Sammons	25,608	Bennett J. Berson	37,094
Nicholas J. Seay	27,386	Michael A. Jaskolski	37,551
George E. Haas	27,642	Richard T. Roche	38,599
Harvey D. Fried	28,298	John T. Pienkos	42,997
Michael J. McGovern	28,326	Daniel G. Radler	43,028
Carl R. Schwartz	29,437	Gregory M. Smith	43,136
Keith M. Baxter	31,233	Steven J. Wietrzny	44,402
John D. Franzini	31,356	David M. Kettner	45,589
		Adam Forman	P46,707

[ ] Additional attorney(s) and/or agents named on a supplemental priority sheet attached hereto

Please direct all correspondence to [ ] Customer Number or label _____ OR [X] Fill in correspondence address below

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City	Milwaukee	**State**	WI	**Zip**	53202-4497
Country	USA	**Telephone**	(414) 277-5709	**Fax**	(414) 271-3552

I hereby declare that all statements made herein of my own knowledge are true and that all statements made on information and belief are believed to be true; and further that these statements were made with the knowledge that willful false statements and the like so made are punishable by fine or imprisonment, or both, under Section 1001 of Title 18 of the United States Code and that such willful false statements may jeopardize the validity of the application or any patent issuing thereon.

Name of Sole or First Inventor: [ ] A petition has been filed for this unsigned inventor

Given Name	Joel	Middle Initial	I.	Family Name	Dulebohn	Suffix e.g. Jr.	

Inventor's Signature _____ Date _____

Residence: City	Lansing	State	MI	Country	USA	Citizenship	USA

Post Office Address: 3510 West Saginaw

Post Office Address: _____

City	Lansing	State	MI	Zip	48917	Country	USA	Applicant Authority	

[ ] [X] Additional inventors are being named on supplemental sheet(s) attached hereto

Please type a plus sign (+) inside this box [+]

DECLARATION

ADDITIONAL INVENTOR(S)
Supplemental Sheet

Name of Additional Joint Inventor, if any | | A petition has been filed for this unsigned inventor

Given Name	Ronald	Middle Initial	J.	Family Name	Carlotti	Suffix e.g. Jr.	

Inventor's Signature		Date	

Residence: City	Grand Rapids	State	MI	Country	USA	Citizenship	USA

Post Office Address	6921 Maple Crest Drive, S.E.
Post Office Address	

City	Grand Rapids	State	MI	Zip	49546	Country	USA	Applicant Authority	

Name of Additional Joint Inventor, if any | | A petition has been filed for this unsigned inventor

Given Name		Middle Initial		Family Name		Suffix e.g. Jr.	

Inventor's Signature		Date	

Residence: City		State		Country		Citizensip	

Post Office Address	
Post Office Address	

City		State		Zip		Country		Applicant Authority	

Name of Additional Joint Inventor, if any | | A petition has been filed for this unsigned inventor

Given Name		Middle Initial		Family Name		Suffix e.g. Jr.	

Inventor's Signature		Date	

Residence: City		State		Country		Citizenship	

Post Office Address	
Post Office Address	

City		State		Zip		Country		Applicant Authority	

Name of Additional Joint Inventor, if any | | A petition has been filed for this unsigned inventor

Given Name		Middle Initial		Family Name		Suffix e.g. Jr.	

Inventor's Signature		Date	

Residence: City		State		Country		Citizenship	

Post Office Address	
Post Office Address	

City		State		Zip		Country		Applicant Authority	

Additional inventors are being named on supplemental sheet(s) attached hereto